

What is claimed:

1. A recliner assembly for use with a seat having a seat cushion and a seat back pivotal between a plurality of reclined positions with respect to the seat cushion, the recliner assembly comprising:

a fixed plate adapted to be secured to the seat cushion;

a mobile plate adapted to be secured to the seat back, the mobile plate coupled to the fixed plate for providing pivotal movement of the seat back through the plurality of reclined positions, the mobile plate including an annular rim defining an axis and a plurality of teeth extending along the annular rim;

at least one sector having a rack of teeth coupled between the fixed and mobile plates, the sector movable between a locked condition having the rack of teeth engaged with the plurality of teeth of the mobile plate for maintaining the seat back in any of the plurality of reclined positions and an unlocked condition having the rack of teeth disengaged from the plurality of teeth of the mobile plate for allowing selective adjustment of the seat back relative to the seat cushion; and

a cam extending about the axis and selectively engagable with the sector and rotatably supported between the fixed and mobile plates for moving the sector between the locked and unlocked conditions in response to rotation of the cam, the cam radially movable relative to the sector for preventing binding of the sector during movement between the locked and unlocked conditions.

2. The recliner assembly of Claim 1 wherein the fixed plate includes wedge surfaces formed thereon for engaging and guiding at least one sector between the locked and unlocked conditions.

3. The recliner assembly of Claim 1 wherein the fixed plate includes at least one pin protruding therefrom and extending through a slot formed in the at least one sector for guiding movement of the sector between the locked and unlocked conditions.
4. The recliner assembly of Claim 1 further including a plurality of sectors.
5. The recliner assembly of Claim 4 wherein the plurality of sectors are offset relative to each other about the axis.
6. The recliner assembly of Claim 5 wherein the rack of teeth of one of the plurality of sectors is fully engaged with the plurality of teeth on the mobile plate and the rack of teeth of the other of the plurality of sectors are partially engaged with the plurality of teeth on the mobile plate in the locked condition.
7. The recliner assembly of Claim 5 wherein the rack of teeth of each of the plurality of sectors is partially engaged with the plurality of teeth on the mobile plate in the locked condition.
8. The recliner assembly of Claim 6 wherein the partially engaged sector is self-adjusting.
9. The recliner assembly of Claim 7 wherein the plurality of partially engaged sectors are self-adjusting.
10. The recliner assembly of Claim 1 wherein the rack of teeth of the at least one sector extends between ends of the sector and wherein individual teeth at the ends of the sector are shorter radially compared to adjacent teeth between the ends of the rack of teeth.
11. The recliner assembly of Claim 1 wherein the at least one sector includes a stepped cam surface formed opposite the rack of teeth.
12. The recliner assembly of Claim 11 wherein the stepped cam surface defines a raised portion and a recess separated by a ramped surface.

13. The recliner assembly of Claim 12 wherein the at least one sector includes a bent arm extending outward from the at least one sector wherein the recess extends between the bent arm and the ramped surface.
14. The recliner assembly of Claim 1 including a shaft having first and second ends defining a shaft axis.
15. The recliner assembly of Claim 14 wherein at least one of the first or second ends extends through an aperture formed in at least one of the mobile or fixed plates for rotation of the shaft about the shaft axis.
16. The recliner assembly of Claim 15 wherein the aperture is oversized relative to the shaft to allow a predetermined amount of radial movement of the shaft within the aperture.
17. The recliner assembly of Claim 13 wherein the cam includes arms extending outwardly for engaging the bent arm of the at least one sector.
18. The recliner assembly of Claim 17 wherein arms engage the raised portion of the stepped cam surface for maintaining the at least one sector in the locked condition.
19. The recliner assembly of Claim 14 wherein the cam is secured to the second end of the shaft.
20. A recliner assembly for use with a seat having a seat cushion and a seat back pivotal between a plurality of reclined positions with respect to the seat cushion, the recliner assembly comprising:
  - a fixed plate adapted to be secured to the seat cushion;
  - a mobile plate adapted to be secured to the seat back, the mobile plate coupled to the fixed plate for pivotal movement of the seat back through the plurality of reclined positions, the mobile plate including an annular rim defining an axis and a plurality of teeth extending along the annular rim;

at least one sector having a rack of teeth coupled between the fixed and mobile plates, the sector movable between a locked condition having the rack of teeth engaged with the plurality of teeth of the mobile plate for maintaining the seat back in any of the plurality of reclined positions and an unlocked condition having the rack of teeth disengaged from the plurality of teeth of the mobile plate for allowing selective adjustment of the seat back relative to the seat cushion;

a shaft rotatably journaled to the mobile and fixed plates; and

a cam extending about the axis and selectively engagable with the sector and rotatably supported by the shaft between the fixed and mobile plates for moving the sector between the locked and unlocked conditions in response to rotation of the cam, the cam radially movable relative to the sector for preventing binding of the sector during movement between the locked and unlocked conditions.

21. The recliner assembly of Claim 20 wherein the shaft includes a reduced diameter portion extending axially through an aperture formed in the cam.

22. The recliner assembly of Claim 21 wherein the aperture is oversized relative to the reduced diameter portion allowing a predetermined amount of radial movement of the cam relative to the shaft.

23. The recliner assembly of Claim 20 wherein the cam includes at least one pin extending axially therefrom.

24. The recliner assembly of Claim 20 including a cam driver secured to the shaft.

25. The recliner assembly of Claim 24 wherein the cam driver includes at least one arm extending radially outward for engaging the at least one pin.

26. The recliner assembly of Claim 25 wherein the at least one arm engages the at least one pin during rotation of the shaft in the unlocking direction for rotating the cam.

27. The recliner assembly of Claim 20 wherein the cam includes arms for engaging bent arms of the at least one sector.
28. The recliner assembly of Claim 20 including a biasing member supported in a recess formed in the fixed plate for biasing the cam in the locking direction.
29. A recliner assembly for use with a seat having a seat cushion and a seat back pivotal between a plurality of reclined positions with respect to the seat cushion, the recliner assembly comprising:
- a fixed plate adapted to be secured to the seat cushion;
  - a mobile plate adapted to be secured to the seat back, the mobile plate coupled to the fixed plate for pivotal movement of the seat back through the plurality of reclined positions, the mobile plate including an annular rim defining an axis and a plurality of teeth extending along the annular rim;
  - at least one sector having a rack of teeth coupled between the fixed and mobile plates, the sector movable between a locked condition having the rack of teeth engaged with the plurality of teeth of the mobile plate for maintaining the seat back in any of the plurality of reclined positions and an unlocked condition having the rack of teeth disengaged from the plurality of teeth of the mobile plate for allowing selective adjustment of the seat back relative to the seat cushion, wherein the fixed plate includes wedge surfaces formed thereon for engaging and guiding at least one sector between the locked and unlocked conditions; and
  - a cam extending about the axis and selectively engagable with the sector and rotatably supported between the fixed and mobile plates for moving the sector between the locked and unlocked conditions in response to rotation of the cam, the cam radially movable relative to the sector for preventing binding of the sector during movement between the locked and unlocked conditions.